THE RELATIVE MERITS OF CURSIVE AND MANUSCRIPT WRITING

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EDITOR'S INTRODUCTION

To furnish the educational experience through which pupils may acquire a mastery of the abiding and dependable tool subjects—reading, writing, arithmetic, spelling—has long been one of the major aims of elementary education. In the past quarter of a century this aim and these tool subjects have been reëxamined to discover: first, the specific skills involved; second, the allocation of these skills to the various grade levels; third, the development of new techniques of teaching, both to improve the mastery of the skills themselves and to shorten the time within which such mastery is acquired; and fourth, the relative place and value of the tool subjects in the total educational process. With the ever changing social life, the constantly shifting interests of children, a better understanding of the learning process, and the constant realignment of values in interpreting the meanings of education, investigations which tend to shed light upon a more intelligent and effective mastery of the common tools are exceedingly timely. The present study by Mrs. Thelma G. Voorhis summarizes the published claims and experimental results of the manuscript method of teaching writing, an ancient system recently revived. It compares the manuscript with the cursive method as to speed and quality of result and as to comparative effects upon beginning reading. The findings are interesting and pertinent, and should result in further research to verify the conclusions presented and to indicate their application in the teaching of reading and writing in the lower primary grades. This monograph presents the only summary of the available evidence upon this important subject at the present time.

L. THOMAS HOPKINS

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I WISH to express my appreciation to the many persons who contributed to this study. Professors Arthur I. Gates, Rudolf Pintner, Edwin H. Reeder, and Henry A. Ruger made valuable suggestions throughout the planning and conduct of the investigation; Mr. Isaac Bildersee and his assistant, Mrs. Jeanette Sheurer, gave invaluable aid in the administration of the experiment; Dr. James Mendenhall made many helpful suggestions; the graduate students of Professor Pintner's class in Measurements assisted in the test surveys. Professors L. Thomas Hopkins and Jesse H. Newlon of the Lincoln School gave their encouragement and generous support throughout the investigation. To all these, the writer extends grateful acknowledgment and appreciation.

T. G. V.

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THE RELATIVE MERITS OF CURSIVE AND MANUSCRIPT WRITING

CHAPTER I

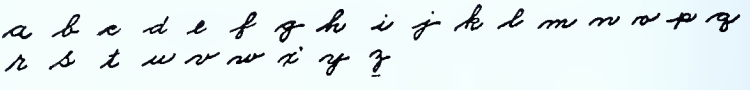
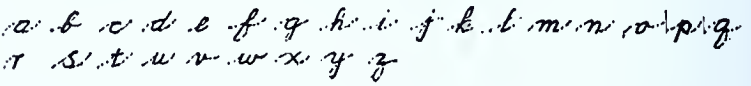
PURPOSE OF THIS STUDY

PROGRESSIVE educators throughout the United States are concerned with the construction of courses of study and teaching methods and materials which will facilitate the development of satisfactory skills in reading and writing, two of the most vital and necessary tools in the present social order. Without facility in the use of these tools, it is difficult to achieve success either in or out of school. For this reason it seems essential for children to learn to use these tools at an early stage in their school careers. Moreover, it seems reasonable to plan for the development of these skills simultaneously and, at least in part, interdependently, since the relationship between them must necessarily be a very close one.

The choice of methods and materials for teaching these subjects becomes more and more difficult because of the ever increasing number of systems and methods available. One such method, introduced into the United States less than ten years ago, has aroused widespread interest and discussion. This method is the so-called "manuscript" method of teaching handwriting. Extravagant claims have been made by manuscript writing enthusiasts not only for the superiority of the method for the improvement of handwriting itself, but also for the facilitation of learning in other subjects, particularly reading and spelling.

Manuscript writing is sometimes called "print" or "print-script." It differs from the traditional cursive writing chiefly in letter form. The manuscript letters are based on the circle or part-circle and straight lines, following closely the Roman letter forms for both capitals and

small letters. The letters are usually taught without connecting strokes, but may be either joined or unjoined. The cursive letters, on the other hand, are always taught with connecting strokes and involve the use of long curves. The distinction between the two forms of handwriting and type used in printing is readily seen in the accompanying chart, which gives the small letter forms for each of the three types of writing.

Print type	a b c d e f g h i j k l m n o p q r s t u v w x y z
Manuscript (basic forms)	a b c d e f g h ı j k l m n o p q r s t u v w x y z
Cursive	
Transition from basic letter forms to cursive	

In some schools manuscript writing is used throughout all the grades. In others, its use is restricted to the primary grades, a transition to cursive writing being made in the fourth, fifth, or sixth grade in order to appease certain parents and teachers who believe that cursive writing is more acceptable in the business world.

Much has been written concerning the relative merits of cursive and manuscript writing. Some experimentation has been undertaken, also. The purpose of this report is to present the evidence, and to summarize the findings of the investigations which have been conducted in this field. An attempt is made, also, to evaluate the methods and materials which are available.

The author believes that a report of this nature will be of value to those interested in the reconstruction of the elementary school curriculum, and to elementary teachers and

supervisors who are responsible for guidance in the learning processes in our elementary schools. For those who may wish to continue their study of this problem, a list of references has been added. Names of current manuals, copy books, and handwriting scales for both cursive and manuscript writing are also included.

CHAPTER II

BRIEF HISTORY OF WRITING

"Of all the Arts, writing, perhaps, shows most clearly the formative force of the instruments used. . . . The curious assemblages of wedge-shaped indentations which make up the Assyrian writing are a direct outcome of the clay cake, and the stylus used to imprint marks on it. The forms of Chinese characters, it is evident, were made by quickly representing with a brush earlier pictorial signs. The Roman characters, which are our letters today, although their earlier forms have only come down to us cut in stone, must have been formed by incessant practice with a flat, stiff brush or some such tool. The disposition of the thicks and thins, and the exact shape of the curves, must have been settled by an instrument used rapidly" [1] [12].[2] For examples of early forms of writing, see Figs. 1–5.

The invention of the printing press in the fifteenth century, and the subsequent wide use of copperplate engraving, had certain well-defined effects upon handwriting. The professional scribes no longer supplied "copy books," and handwriting became a lost art. Engraving led to an elaboration of the letter forms; the letters became joined and less simple. An increase in the slope of the writing tended to make it less legible also.

By the end of the nineteenth century handwriting had deteriorated to such an extent that it had become a very real problem in the education of children. In response to this need for a better form of handwriting, many systems

[1] From Johnston, Edward, *Writing, Illuminating, & Lettering*, pp. ix–x. By permission of Isaac Pitman & Sons, publishers.

[2] Numerals in brackets refer to references in the Bibliography.

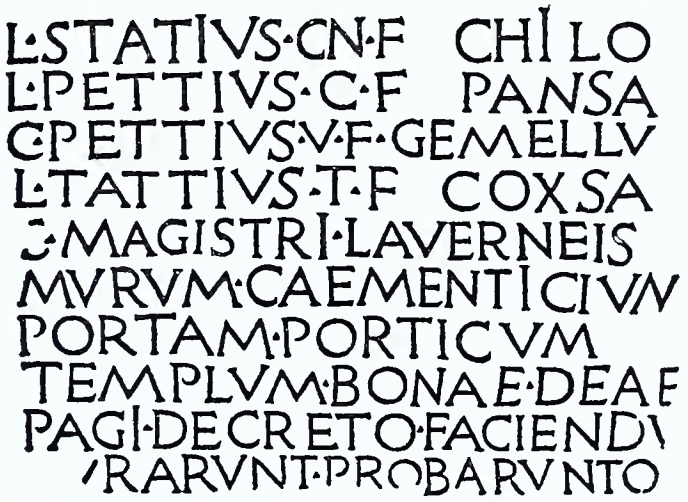


FIG. 1. Latin inscription from the Temple of Bona Dea, at Lavernæ, now Prezza, Italy*

*From Mason, William A., *A History of the Art of Writing.* By permission of The Macmillan Company, publishers.

of copy books were developed. Some of these taught simple letter forms, while others were extremely intricate. In most of these systems, the letters were, and still are, taught with connecting strokes.

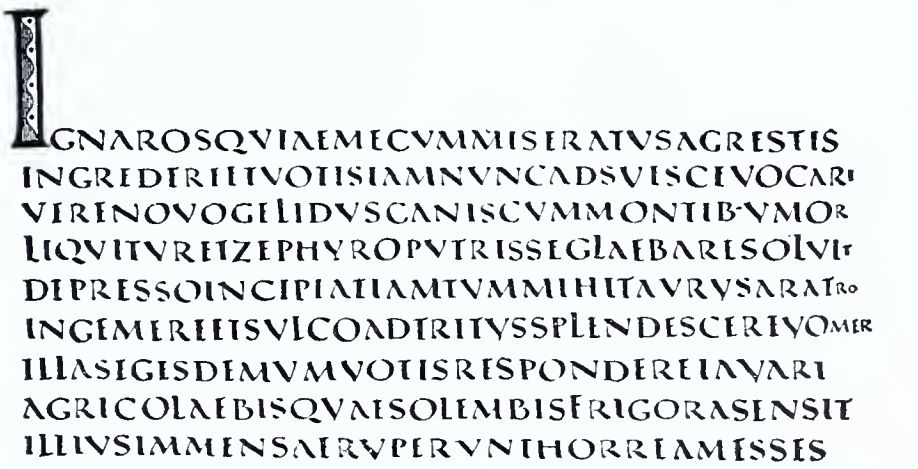


FIG. 2. Page from a manuscript copy of Virgil's Æneid, written in "Square Capitals." 6th century*

*From Mason, William A., *A History of the Art of Writing.* By permission of The Macmillan Company, publishers.

FIG. 3. Selections from the 214 Chinese radicals, with their significance*

*From Mason, William A., *A History of the Art of Writing*. By permission of The Macmillan Company, publishers.

Among the educators interested in developing a simplified system of letter forms was Miss M. M. Bridges, an Englishwoman. Miss Bridges developed a very beautiful handwriting by copying the handwriting of the fifteenth century scribes. In 1899 she published a copy book which was adopted by the Parents National Educational Union in

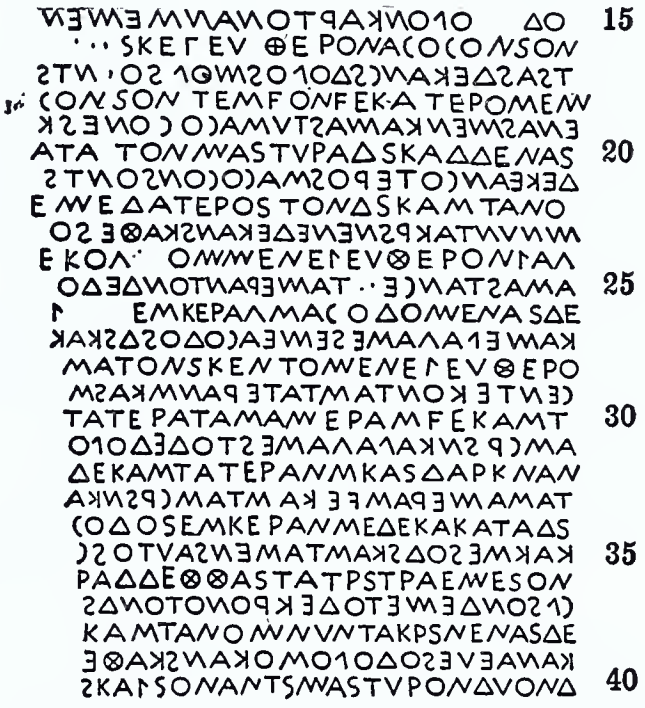


FIG. 4. Greek inscription from Gortyna, Crete*

* From Mason, William A., *A History of the Art of Writing*. By permission of The Macmillan Company, publishers.

England, an organization of parents who were forced to teach their children at home. Aside from the adoption of the copy book by the Parents Union, Miss Bridges' work attracted little attention and it was several years before there was a general interest in the movement.

In 1913 Mr. Edward Johnston, an illuminator, spoke to a meeting of teachers and displayed illustrations of beautiful handwriting that was done before the invention

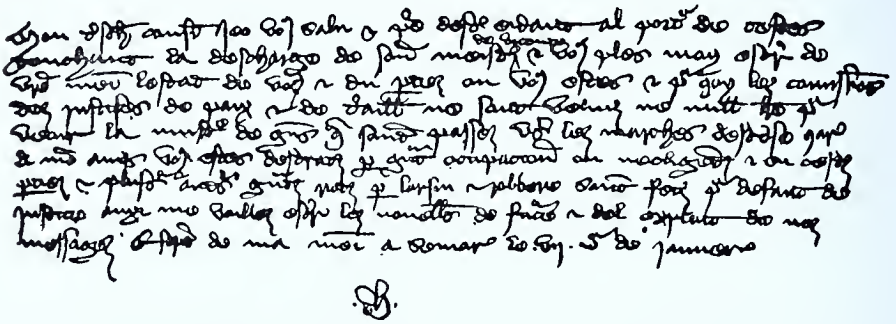


FIG. 5. Handwriting in the reign of Henry IV (1399–1413). Extract from a letter of the Prince of Wales*

* From Mason, William A., *A History of the Art of Writing.* By permission of The Macmillan Company, publishers.

of the copperplate. Considerable interest was manifested and several people followed his suggestions and taught this earlier form of handwriting to children.

In 1919 Miss S. A. Golds, of St. George the Martyr School, London, published a copy book called "A Guide to the Teaching of Manuscript Writing." Miss Golds laid emphasis on the simplification of the letter forms. Mr. Grailey Hewitt also gave considerable impetus to the movement about this time, teaching children a simplified letter form and laying much stress on the use of the broad-edged pen.

In 1921 manuscript writing was introduced from England simultaneously in Boston and New York. By September, 1922, it was being taught in several private schools in this country, including the Children's University School, the Brearly School, and Miss Chandler's School in New York City. During that year it was introduced into the fourth and fifth grades in the Lincoln School. In 1923 it was taught in the Horace Mann School under the direction of Miss Marjorie Wise, at that time a graduate student at Teachers College, Columbia University.

By 1930 more than one hundred public and private schools in the United States had adopted manuscript writing either throughout the grades or for limited groups, such as the primary grades [4, p. 450].

CHAPTER III

SUMMARY OF EXPERIMENTAL INVESTIGATIONS AND EXPERT OPINION

CURRENT discussion embodies many conflicting opinions concerning the relative merits of cursive and manuscript writing. The claims mentioned most frequently in favor of manuscript writing include the following:

1. It is more legible than cursive writing.
2. It is easier to learn.
3. It is more rhythmical to write.
4. It can be written as rapidly as cursive writing.
5. It is more pleasing to read.
6. It facilitates the learning of reading and spelling.
7. It removes the necessity for the young child to learn two alphabets, thus reducing time and effort.
8. The neatness and legibility of style have a definite transfer to other written work, such as spelling and English composition.
9. It is as individualistic as cursive writing.
10. It satisfies the young child's desire to write.
11. Its simple letter forms reduce eyestrain.
12. Since it is easier to write, it reduces physical strain.
13. The legible letters form a basis for cursive writing, if a transition to cursive writing is desired.
14. Business men in both England and America have voiced their approval of manuscript writing.

The opponents of manuscript writing believe that:

1. It is slower and less fluent than cursive writing.
2. It tends toward a stereotyped letter form, thus eliminating individuality in writing.

3. It is not yet generally accepted for use in the business world.
4. Children taught manuscript writing might encounter difficulty in reading the cursive writing of their elders.

COMPARATIVE LEGIBILITY OF CURSIVE AND MANUSCRIPT WRITING

Certain of these claims have been investigated by use of experimental procedures. Others have not been subjected to scientific investigation. It is generally conceded, however, that manuscript writing is more easily read than cursive writing. The only objective study pertinent to this point is that reported by Miss Olive Turner [22], a graduate student at the University of Chicago. Miss Turner compared the speed and legibility of manuscript and cursive writing by measuring the rapidity with which each could be read. Samples of each kind of handwriting were read

TABLE I

RELATIVE LEGIBILITY OF CURSIVE AND MANUSCRIPT WRITING DETERMINED BY READING SPECIMENS OF EACH IN A MIRROR * [22, p. 780]

GRADE	CURSIVE			MANUSCRIPT		
	Av. No. Sec. to Read Each Specimen	Av. No. Words per Specimen	Av. No. Sec. to Read Each Word	Av. No. Sec. to Read Each Specimen	Av. No. Words per Specimen	Av. No. Sec. to Read Each Word
II....	6.57	10.00	0.60	6.82	10.00	0.68
III...	39.00	46.40	0.84	43.84	56.73	0.77
IV...	50.89	50.87	1.00	64.41	83.54	0.77
V....	50.48	47.66	1.06	75.87	85.83	0.88
VI...	93.35	108.71	0.84	96.85	141.28	0.69
VI...	89.72	99.33	0.90	65.67	97.22	0.68
VI...	114.93	127.50	0.90	62.68	92.75	0.68
VI...	90.33	91.83	0.98	64.12	85.17	0.75

* From Turner, Olive, "The Comparative Legibility and Speed of Manuscript and Cursive Writing." By permission of *The Elementary School Journal.*

orally as they appeared upside down in a mirror placed at the top of a page. Time for reading the passage was kept with a stop-watch. The subjects, 115 children in Grades 2 to 6 inclusive, were trained in mirror reading, practice being given in manuscript and cursive writing alternately. The relative legibility of the two forms of writing, as determined by speed of reading, is shown in Table I.

Miss Turner concluded from her data that manuscript writing was significantly more legible than cursive writing because of independence of letters, good spacing between words, and economy in line space. It is particularly interesting to observe that children can read manuscript more rapidly than cursive writing, although all of their practice, apart from reading books and magazines, has been of the cursive type. It is possible that children who have been taught only manuscript writing might encounter difficulty in reading cursive writing, although there is no evidence available on this point.

COMPARATIVE SPEED AND QUALITY OF CURSIVE AND MANUSCRIPT WRITING

The most debatable question concerning the two methods is that of their relative speed. On this point there is considerable objective data, but the conclusions to be drawn from them are somewhat contradictory.

As long ago as 1893 Binet and Courtier [2], two French investigators, used laboratory methods in an attempt to determine the relative speed of connected and disconnected writing. They analyzed the records made with the Edison pen, an electrical device which recorded movements to minute fractions of a second. These investigators concluded from their data that connected writing was faster than disconnected writing.

A similar study was made by Freeman [5] at a later date, using the kymograph method. Under the sheet of paper

on which the subject wrote, traveled a strip of paper on which the records were made by means of a typewriter ribbon. An electric marker was so arranged as to mark off at regular intervals of tenths of a second. Thus the speed of any letter or any part of a letter could be determined. The number of pauses and the duration of each were also recorded by this device. It was found that in making the free stroke in the letters "x" and "t," that is, the movement made in the air, the speed was the same as that of the stroke immediately preceding and following it. In other words, Freeman found no reliable difference in speed of writing connected and disconnected letters. This seems to contradict the findings of Binet and Courtier. The subjects in both studies wrote the cursive letter forms.

A direct comparison of the movements in cursive and manuscript writing was made by Gray [8], [9], by analyzing the motion picture records of the writing of ten adults, and thirty children of fifth grade level. The records were made by photographing the movements of the hand and arm by means of a kinetoscopic camera. The adults wrote the sentence, "The job requires extra pluck and zeal from every young wage earner," and the children wrote the sentence, "We use writing in school subjects." The analysis technique was essentially the same as that used by Freeman in the study reported above. The chief differences observed between the movements in the two types of writing were differences in the speed with which the movements were made, air strokes, as a rule, being made faster than the contact strokes; for example, it took longer to write "  " than to write "  " because the long upward stroke "  " was slower when made on the paper than when made in the air. Dr. Gray found no significant difference in the length of the pauses between letters in manuscript writing and those in cursive writing. Moreover, there appeared to be greater

uniformity in speed of writing manuscript than in writing cursive. "No significant differences were found between manuscript and cursive writing, in the manner of grasping the pen, in the sideward movement of the hand within words, in the method of moving the hand and arm along the line, or in the combination of hand movements, arm movements, and finger movements executed while forming the letter strokes."[1] [8, p. 270]

The study reported by Turner [22] mentioned previously, also yields some evidence as to the relative speed of the two kinds of writing. Miss Turner reports that "in rate of production manuscript writing exceeded the norms established for the grades studied except for Grade 2. While considerable variation was shown in the rate of production of manuscript writing, there was a constant increase up to, though not inclusive of, Grade 6." The average rate of writing for pupils at the various grade levels is shown in Table II.

TABLE II

RATE OF WRITING OF PUPILS IN GRADES II–VI FOR CURSIVE AND MANUSCRIPT WRITING AS COMPARED WITH THE GRADE NORMS* [22]

GRADE	NORM	NUMBER OF WORDS WRITTEN PER MINUTE		DIFFERENCE
		Cursive	Manuscript	Ms.-Cursive
II.....	38	19	24	13
III.....	42	30	44	34
IV.....	46	42	58	35
V.....	50	54	59	10
VI.....	54	63	58	−10

* From Turner, Olive, "The Comparative Legibility and Speed of Manuscript and Cursive Writing." By permission of *The Elementary School Journal.*

Other studies comparing speed and quality of manuscript and cursive writing have been made by Conard and Offer-

[1] From Gray, William Henry, "An Experimental Comparison of the Movements in Manuscript and Cursive Writing." By permission of *Journal of Educational Psychology.*

man [4], Gates and Brown [7], Kimmons [15], Reeder [20], and Winch [23]. The study made by Conard and Offerman was a test of speed and quality of manuscript writing as learned by adults. The purpose was to compare, by means of motion pictures, the speed and quality of cursive (familiar) handwriting with manuscript (unfamiliar) handwriting before and after a practice period of seven days. The subjects were four adults who were not familiar with manuscript writing. Twenty-minute practice periods were allowed for the subjects to familiarize themselves with the manuscript letter forms. Each subject then wrote twice, in manuscript, the phrase, "The quick brown fox." The first writing was "as fast as possible," the second was "as well as possible," and the third was in the subjects' ordinary cursive handwriting. The films of the records were developed and the pictures were studied as they were projected on a screen. On the tracings made from the screen projections, each stroke, pause, and air movement was marked, and these records were summarized. These data were then minutely analyzed, comparisons being made of speed and quality of strokes, pauses, and air movements of each subject's writing before and after practice. A comparison was also made of the average of each individual's speed and quality with the average of the group records in speed and quality. Although the number of subjects participating in the experiment was small and the amount of practice limited, the authors' conclusions are of interest. After a week's practice the results indicated that:

1. There was decided decrease in the time consumed in making strokes in manuscript writing.
2. A marked decrease was made in the number of pauses used in writing manuscript.
3. The number of pauses increased at the beginning and ending of strokes.

4. The strokes were more rhythmical in length.
5. The pauses occurred more regularly.
6. Each subject improved in both speed and quality.
7. The total speed in strokes of subjects A and B compared favorably with their total for cursive writing and subjects E and D wrote faster in manuscript than in cursive.

These authors generalize their findings as follows: "The . . . findings concerning rhythm and pauses are established facts in the case of writers in cursive writing. The findings herewith indicate that manuscript writing is a type of writing which can be acquired quickly and easily. Hence, if the above gains can be made in a short time with adults, children, whose writing habits are not so well established, should show a more rapid gain"[1] [4, p. 467].

The study reported by Gates and Brown [7] included several experimental comparisons of manuscript and cursive writing. The data for these comparisons were secured from Grades 1 to 6 inclusive in a New York City public school. The instruction received by all pupils at each grade level was the same except that half the children were taught cursive writing and half were taught manuscript writing during the February to June term of school (the interval of the experimental teaching). Tests were made in February for the purpose of equating groups, and re-tests were conducted in March, April, and June. Statistical reliabilities of the difference between groups were computed. In quality, the first grade manuscript group showed a slight advantage from the beginning to the end of the semester with a slight indication of an increase in superiority during the period. In speed of writing, the curves reveal a basis

[1] From Conard, E. U. and Offerman, E. J., "A Test of Speed and Quality in Manuscript Writing as Learned by Adults." By permission of *Teachers College Record.*

for the real and assumed advantage in the case of learning. The most conspicuous feature of the curves is the indication that children develop rapidly from the beginning in speed of print writing, whereas they are unable to make substantial progress in speed in cursive writing until after at least a month and a half of practice [7, p. 5]. For grades above the first, the data point toward the conclusion that while speed of print writing can be increased to a very high level, the additional gain comes with comparative difficulty. Cursive writing lends itself more readily to fluency. With little special attention cursive writing yields a speed greater than that secured by strenuous, highly motivated drill in print-script in Grades 4 to 6. The authors summarize their findings as follows [7, p. 10]: "In summary it may be said that in Grades 4–6 inclusive, print-script shows an advantage when high legibility and quality (as adult judges see it) is required, whereas cursive writing is superior when the demand is for speed. In normal or typical writing, cursive is—other things being equal—more rapid while print-script is slightly more legible in Grades 4–6 inclusive. In Grade 1, during the first semester of experience in writing (but the second term in school) facility in print-script appears to be more readily learned. Rate and quality in print-script seem both to be acquired satisfactorily for normal purposes in Grade 2 and perhaps in Grade 3. In general, for all-round usefulness print-script seems to be more suitable in the primary grades (1 and 2) and cursive in grades above 4, with 3 uncertain."[1]

Somewhat in contrast to these findings are those reported by Kimmons, Chief Inspector of the London County Council [15]. Kimmons conducted five-minute tests in manuscript and cursive writing with more than 15,000 children, to determine the relative speed of writing of the two meth-

[1] From Gates, A. I. and Brown, H. S., "Experimental Comparisons of Print-Script and Cursive Writing." By permission of the authors.

ods. The scores in terms of letters written per minute for 9,264 girls are reported in Table III.

These girls had had two or more years of training in the use of manuscript writing. In these tests the manuscript scores were definitely higher than the cursive in every case up to, though not including, year 13. These data indicate that with the same amount of practice manuscript writing can be as rapid as cursive, if not more rapid, in the upper elementary grades as well as at the primary level.

TABLE III

RELATIVE SPEED OF MANUSCRIPT AND CURSIVE WRITING: RECORDS OF 9,264 GIRLS ON FIVE-MINUTE TESTS* [15]

NUMBER TESTED	AGE	LETTERS PER MINUTE MANUSCRIPT	LETTERS PER MINUTE CURSIVE
373	7	21.6	18.8
1536	8	25.5	21.4
1609	9	34.9	29.3
1572	10	42.4	36.1
1449	11	48.7	44.5
1509	12	55.0	49.3
1216	13	60.9	61.0

* From Kimmons, C. W., Introduction to *On the Technique of Manuscript Writing*, by Marjorie M. Wise. By permission of Charles Scribner's Sons, publishers.

Reeder [20] was interested to determine whether manuscript writing could be speeded up in the fourth and fifth grades so that it would equal or approximate the norms set for these grades. He conducted an experiment in three fifth grades and four fourth grades in the Horace Mann School of Teachers College. Of the three fifth grades, one was using cursive writing, one was using manuscript, and the third was composed of children half of whom were using cursive and half manuscript. In the fourth grades all the classes were using manuscript writing. During the experimental period the teachers taught writing fifteen minutes per day, three days a week. Tests were given regularly.

The results of these tests were analyzed, quality and speed being averaged for each child and also for the group as a whole. At the end of the experiment, which ran for fourteen weeks, the experimenter concluded that:

"1. Both cursive and manuscript writers gained in both speed and quality.
"2. The cursive group gained much more than the manuscript group in quality but much less in speed.
"3. At the beginning of the experiment the manuscript groups were far below the norm in speed but slightly above it in quality. At the end of the experiment, they had gained slightly in quality and were but six letters below the norm in speed.
"4. At the beginning of the experiment, the cursive writers were far below the norm in both speed and quality. At the end of the period they were slightly above the norm in quality but still very much below the norm in speed." [1]

Winch [23] conducted a study in London to find out what happens to efficiency in writing when one style of writing is changed for another with intensive practice in the new form. Children in six different schools were used; some of them had learned cursive writing initially, the others manuscript. In this experiment the children were taught whichever type of writing was new to them. No indication was found that print-script was more or less facile than cursive script. The results also indicated that unless the change was made early in the school course, the new style of writing would not attain to the final efficiency of the old style even after three years of disuse of the old.

A still more recent study of the relative speed and quality

[1] From Reeder, Edwin H., "An Experiment with Manuscript Writing in Horace Mann School." By permission of *Teachers College Record.*

of cursive and manuscript writing was made by the author. Although the study was limited to progress during the first grade of school, the findings are of interest. The study was a part of an experiment comparing the relative merits of cursive and manuscript writing in the first grade. The general plan of the experiment is given in considerable detail at a later point in this report, and need be mentioned only briefly here. A group of 49 entering first grade pupils in a New York City public school were given regular instruction in manuscript writing throughout the entire first grade. A group of 63 pupils, essentially equal with respect to age, mental level, and social background, and entering school at the same time, were taught cursive writing during the same period.

All instruction was given by the regular classroom teachers, fifteen-minute writing lessons being given daily. The lessons for the two groups were identical with respect to material, the only difference being that one group of pupils was taught the manuscript letter forms following the Stone-Smalley method, whereas the other group was taught the cursive letter forms as prescribed in the New York City course of study for first grades.

In addition to the battery of standardized tests used in equating the groups, surveys were conducted in January, April, and June in order to determine the pupils' status at regular intervals. At the beginning of the school year the children had had neither experience nor instruction in handwriting. By January nearly all could write their names and a few words. In April and June five-minute tests were conducted to determine the relative speed and quality of the two types of writing at these times. The results of these tests are shown in Table IV.

All the pupils were tested on the same day and with the same text, being told to write as well and as quickly as possible. The papers were rated for speed by counting the

number of letters written per minute. The quality score was an average of the independent judgments of five adults who rated each paper on the Conard Manuscript Writing Standards—Pencil Forms. This scale was used for both

TABLE IV

RELATIVE SPEED AND QUALITY OF MANUSCRIPT AND CURSIVE WRITING ON APRIL AND JUNE TESTS; RECORDS OF 49 MANUSCRIPT AND 63 CURSIVE TRAINED FIRST GRADE PUPILS

Rate in letters per minute

	Number of Pupils	October		April		June		April to June Gain	
		Mean C. A.	Mean I. Q.	Mean Rate	Mean Quality	Mean Rate	Mean Quality	Av. Gain Rate	Av. Gain Quality
Manuscript..	49	6–4	93.98	5.64	3.34	6.18	3.53	0.54	0.19
Cursive.	63	6–4	93.95	3.90	3.51	5.21	3.87	1.31	0.36

the manuscript and the cursive writing because the judgments were found to be more consistent when both forms of writing were rated by this scale rather than by a cursive scale. The judges were instructed to compare each paper with the scale and to record the number of the sample most nearly equal to that of the paper being scored. Thus a quality of "3" meant that, in the judge's opinion, the paper being rated was more like Sample 3 on the scale than it was like any other sample in the series. Examination of Table IV shows that in this experiment the pupils who had learned manuscript writing wrote, on the average, one letter more per minute in the June test than did those with cursive training. The difference between the means is small but reliable, the standard difference being 2.36. In quality the cursive trained children were slightly superior, scoring on the average 0.34 points higher on the June test than did the manuscript children, the standard difference being 1.6. This difference is smaller and also less reliable than the dif-

ference in speed. Since the differences between the means for both speed and quality are small in Grade 1, the choice between the two forms of handwriting must depend, in part at least, upon such additional factors as the relative influence of the two types of writing upon other school subjects and upon general habits of work.

COMPARATIVE INFLUENCE ON BEGINNING READING

For many years primary teachers have used "print" letter forms in introducing the writing of names and directions. They point out that children first meet the written symbol in printed form. The letters on their building blocks and in their picture books are printed. The words on street signs and billboards are in the printed form. The names on all articles brought from the grocery and market are in print. Because of this early acquaintance with the printed form, it is believed that children find the print or manuscript system of letters easier to write, and also that learning to write words and sentences in manuscript will facilitate learning to read.

Two studies previously mentioned yield objective data with regard to these claims. Gates and Brown [7] investigated the ease of learning cursive and manuscript writing and the author studied the relative influence of cursive and manuscript writing on beginning reading.

The subjects of study by Gates and Brown were 44 first grade pupils in the second term of school. The children were divided into two groups of 22 each, substantially equivalent in age, intelligence, and writing ability. One group was taught print-script and the other cursive writing. All other instruction was identical for both groups. The experimental teaching consisted of twenty lessons of approximately twenty minutes each from February to June. All the teaching was done by the regular classroom teacher. Tests were made in March, April, and June, the two groups

being tested on the same text at the same time. The results of these tests appear in Table V.

TABLE V

TWENTY-TWO FIRST GRADE PUPILS IN THE CURSIVE AND PRINT-SCRIPT GROUPS

Quality in terms of Thorndike Scale. Speed in letters per minute

	Feb. 9		March 26		April 26		June 10	
	Q.	Sp.	Q.	Sp.	Q.	Sp.	Q.	Sp.
Directions: "Write as well as you can."								
Print	4.0	8.0	5.2	9.4	5.7	10.4	6.9	12.7
Cursive	4.0	7.4	4.7	7.8	5.4	9.4	6.4	11.4
Directions: "Write as fast as you can."								
Print	3.6	10.3	4.7	12.6	5.4	14.4	6.6	19.6
Cursive	3.5	9.0	4.6	9.6	5.0	12.8	6.2	16.8
Average of All Tests								
Print	3.8	9.1	4.9	11.2	5.5	12.8	6.7	16.0
Cursive	3.7	8.3	4.6	8.7	5.2	11.2	6.3	14.2

"In quality, the print-script shows a small advantage from the beginning to the end of the semester with a slight indication of an increase in superiority during the period. In speed of writing the cursive reveals a basis for the real and assumed advantage of print-script in the case of learning" [7]. It should be remembered, in interpreting these data, that the experiment was of relatively short duration and involved a small number of children.

THE AUTHOR'S EXPERIMENTATION TO DETERMINE THE INFLUENCE OF WRITING ON BEGINNING READING

The author's investigation was concerned with measuring the relative influence of cursive and manuscript writing on first grade reading. The investigation was conducted in six first grade classes in Public School No. 205, Brooklyn, New York, throughout the school year 1928–1929. The children were, for the most part, of English-speaking parentage. The traditional background, in many cases, was that

of the Southern European. In chronological age and intellectual status the groups were typical of first grades in city school populations.

At the beginning of the school year 323 entering first grade children were given a battery of standardized group tests including:

1. Pintner-Cunningham Primary Mental Test: Form A.
2. Detroit First Grade Test of Intelligence: Form A.
3. Gates Primary Reading Test: Word Recognition, Form 2.

The children were then reclassified. Six groups, substantially equivalent with respect to age, intelligence, reading status, and attendance or nonattendance in kindergarten,[1] participated in the experiment. Two atypical groups were not included in the experiment. One was composed of children who, because of language handicap or mental immaturity, failed to rate above 72 I.Q. on the intelligence tests. The other group was composed of mentally mature children who made up a "rapid-advance" class and who were therefore not available for the present study.

The six classes included in this experiment received identical instruction in reading and all other subjects except handwriting. The basal text in reading was the *Progressive Road to Reading* series. All the children received from twenty to thirty minutes' daily instruction in reading, following closely the method outlined in the manual for the series. In handwriting, three classes were taught cursive writing for fifteen minutes daily, following the New York City Public School Course of Study and Syllabus for Elementary Schools, Grades 1A–6B, 1927 edition. These three classes are referred to collectively throughout this report as

[1] No children who had previously attended the first grade were retained in the experimental groups.

"the cursive group." The three other classes followed the same course of study but used the manuscript letter forms, following the Stone-Smalley manuals. These three classes are referred to collectively as the "manuscript group." Large primary pencils were used by all children to avoid the cramped use of the finer finger and wrist muscles. A mimeographed copy of each day's handwriting lesson was given to each child. These copies consisted of single sheets of fifteen lines spaced five-eighths of an inch apart and divided into four columns. The four words to be practiced were mimeographed on the top lines. For the manuscript group the words were presented in manuscript writing, and for the cursive group, in cursive writing. The stencils for both cursive and manuscript lessons were cut by one teacher in order to keep the models for all children uniform in quality.

All instruction was given by the regular classroom teachers.[1] No class retained the same teacher throughout the year, however, as the school was organized on the half-year promotion plan. Special permission was given for two 1A teachers (one cursive and one manuscript) to remain with the experimental groups during the second term. These teachers exchanged classes at the end of the first half-year to give the experimenter some check as to whether it was the teacher or the handwriting method that caused the difference in reading progress. It was recognized as desirable to have the six teachers who began the experimental teaching in the fall continue with the study during the second term, and to have each teacher of a manuscript class in the first term teach a cursive class in the second term, and vice versa. This appeared to be impossible, however, and the rotating of the two available teachers was accomplished as a compromise between the most and the least

[1] Misses Curley, Junge, Klein, Manning, Nolan, Robbins, Rosenzweig, Stadmeyer, Mrs. Endsweig, and Mrs. Snyder.

desirable practice in this respect. The experimenter obtained special permission for the six experimental classes to be promoted intact from 1A to 1B.

In addition to the initial battery of standardized tests used in equating the groups, surveys were conducted in January, April, and June in order to determine the reading status at definite intervals and to establish learning curves for the two groups.[1]

The tests used in these surveys were as follows:

January
- Detroit Word Recognition Test: Form A
- Gates Primary Reading Test: Word Recognition, Form 1

April
- Gates Primary Reading Test: Word Recognition, Form 1
- Gates Primary Reading Test: Word, Phrase, and Sentence Meaning, Form 1

June
- Detroit Word Recognition Test: Form A
- Gates Primary Reading Test: Word Recognition, Form 2
- Gates Primary Reading Test: Word, Phrase, and Sentence Meaning, Form 2
- Gates Primary Reading Test: Reading of Directions, Form 2

Equating the Groups

That the cursive and manuscript groups were practically identical in chronological age will be seen from Table VI. The mean age in months for the cursive group on October 1

[1] The author was assisted in these surveys by the following graduate students at Teachers College, Columbia University: M. P. Ekas, L. Hacker, E. Hastie, N. Lewis, J. Long, L. Nisbett, E. Peabody, A. Ramus, E. Robinson, and E. Wilson.

TABLE VI

MEAN CHRONOLOGICAL AGE IN MONTHS FOR CURSIVE AND MANUSCRIPT GROUPS—P. S. 205 BROOKLYN—OCTOBER 1, 1928

	NUMBER OF PUPILS	MEAN AGE IN MONTHS	S. D.	DIFFERENCE BETWEEN MEANS	S.D.diff.	DIFFERENCE / S. D. diff.
Cursive....	107	76.34	3.59	0.28	0.52	0.54
Manuscript.	88	76.62	3.62			

was 76.34, with a standard deviation of 3.59. The mean for the manuscript group was 76.62 months, with a standard deviation of 3.62. The difference between the means of 0.28 months is held to be real but insignificant for the purpose of the experiment.[1]

With respect to general intelligence, the means for both groups fall within the "normal" range according to Terman's classification of intelligence [27, p. 79]. A mental rating was secured for each child by averaging the I.Q.'s earned on the Pintner-Cunningham Primary Test of Mental Ability and the Detroit First Grade Intelligence Test. The writer recognizes that, in general, it is bad practice to average I.Q.'s but justifies doing so in this case because of the exceedingly narrow range in chronological ages of the children involved. The range of I.Q.'s for the cursive group was 72–127 with the mean at 92.33 and the standard deviation 11.81. In the manuscript group the range was 72–119 with the mean at 96.35 and the standard deviation 9.64. (See Table VII.)

The difference of 4.02 in I.Q. between the groups is probably a real difference and not due to chance errors in measurements. It should be taken into account in interpreting the differences between the two groups in the final tests.

[1] For a discussion of the reliability of measures, see Garrett, Henry E. [26], *Statistics in Psychology and Education*, Chap. III. Longmans, Green & Company, 1926.

TABLE VII

INTELLIGENCE QUOTIENTS OF CURSIVE AND MANUSCRIPT GROUPS AS MEASURED BY COMBINED SCORES ON PINTNER-CUNNINGHAM AND DETROIT FIRST GRADE INTELLIGENCE TESTS

	NUMBER OF PUPILS	MEAN I. Q.	S. D.	DIFFERENCE BETWEEN MEANS	S.D. diff.	DIFFERENCE / S. D. diff.
Cursive....	107	92.33	11.81	4.02	1.54	2.61
Manuscript.	88	96.35	9.64			

For a limited group, this difference in I.Q. has been eliminated. The data for the limited groups are presented in separate tables for comparison. (See Tables X and XII.)

In reading status, the two groups were practically equivalent at the beginning of the experiment, as is shown in Table VIII. The mean score for the cursive group is

TABLE VIII

MEAN SCORES EARNED ON GATES WORD RECOGNITION TEST—OCTOBER 1928

	NUMBER OF PUPILS	MEAN SCORE	S.D.	DIFFERENCE BETWEEN MEANS	S.D. diff.	DIFFERENCE / S. D. diff.
Cursive....	107	0.68	1.36	.51	.21	2.43
Manuscript.	88	1.19	1.65			

seen to be .68 words, with a standard deviation of .15, while the manuscript group earned a mean score of 1.19 words, with a standard deviation of .31. The manuscript group recognized, on the average, less than one word more than the cursive group.

In handwriting, the children of both the cursive and the manuscript groups had learned to make the letters "O," "a," "m," and "o" in cursive form previous to the beginning of the experiment. No other writing had been done,

however, and it seemed reasonable to assume that such a limited amount of instruction would not influence the outcome of this experiment.

The foregoing data indicate that at the beginning of the experiment the groups were practically equivalent with respect to age, handwriting, and reading status, and close to equality in intelligence scores.

Analysis of the Learning Curves

The data secured in the initial and subsequent surveys are interpreted with a view to supplying answers to the following questions:

1. Do average first grade children learn to read more or less readily when taught handwriting by the manuscript rather than by the cursive method?
2. What evidence is there in these results to support or refute the belief that girls learn to read more readily than boys do at this level?
3. Does the factor of attendance or non-attendance at kindergarten affect the reading progress of either or both experimental groups?
4. Is the final difference in reading status in the two experimental groups due to differences in method of teaching handwriting or can it be attributed to teacher personality?
5. Do bright or dull children reflect the greater influence of handwriting method on beginning reading?

Differences in Total Cursive and Manuscript Groups

Do average first grade children learn to read more readily if taught handwriting by the manuscript or by the cursive method? A summary of the data from this experiment indicates a positive answer to this question. The means for children in the cursive and manuscript groups on the Gates

Primary Reading Test (Word Recognition) for the four surveys are shown in Figure 6 and in Tables IX and X. Table IX contains the records of all the children taking the tests in the four surveys. Table X contains the records of two smaller groups, more nearly identical with respect to chronological age and mental age than the larger groups. Examination of the two tables shows that the manuscript group scored significantly higher than the cursive group in every case. In the large groups the manuscript children had a slight advantage at the beginning, recognizing on the

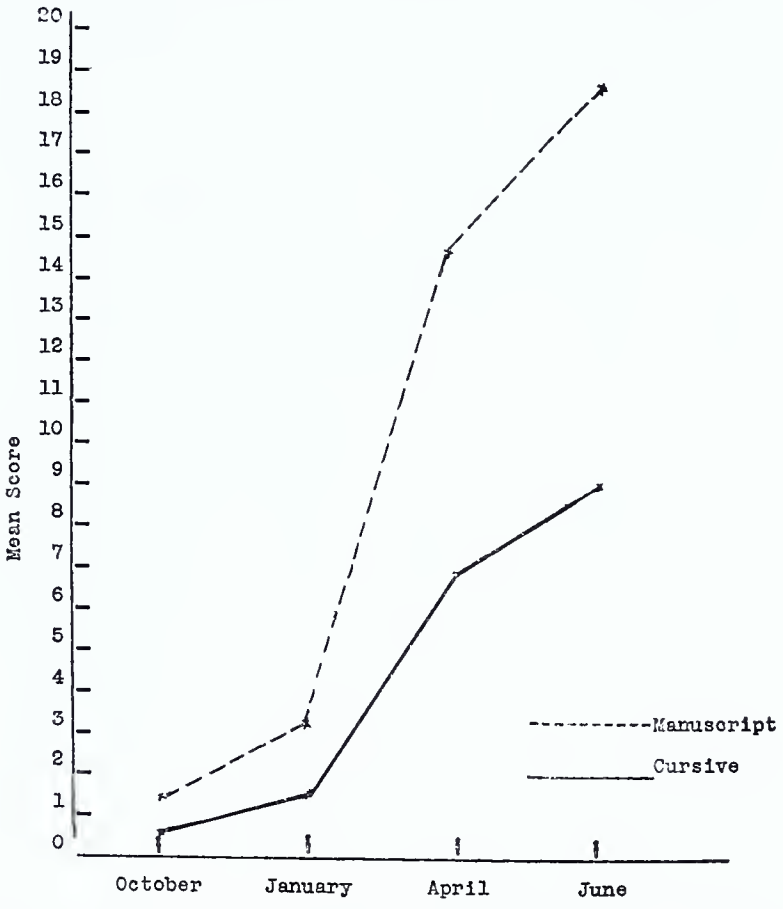


FIG. 6. Mean Scores of Manuscript and Cursive Groups on Gates Primary Reading Test: Word Recognition on October, January, April, and June Surveys

TABLE IX

MEAN SCORES FOR TOTAL CURSIVE AND TOTAL MANUSCRIPT GROUPS—GATES PRIMARY READING TEST: WORD RECOGNITION—OCTOBER, JANUARY, APRIL, AND JUNE

	OCTOBER							JANUARY					APRIL					JUNE				
	No.	Mean C.A.	Mean I.Q.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.
Manuscript....	88	6–4	96.35	1.19	1.65	.51	2.10	78	3.37	3.86	1.65	3.24	85	14.47	9.40	8.78	7.63	86	18.79	10.87	10.09	7.51
Cursive.....	107	6–5	92.33	0.68	1.26			98	1.72	2.69			99	5.69	5.28			105	8.70	6.72		

TABLE X

MEAN SCORES FOR SELECTED CURSIVE AND SELECTED MANUSCRIPT GROUPS—GATES PRIMARY READING TEST: WORD RECOGNITION—OCTOBER, JANUARY, APRIL, AND JUNE

(Only pupils attending ALL tests included)

	OCTOBER							JANUARY					APRIL					JUNE				
	No.	Mean C.A.	Mean I.Q.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	No.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.
Manuscript....	49	6–4	93.98	0.96	1.54	.15	.52	49	2.88	3.43	1.29	2.19	49	13.55	8.67	8.27	5.91	49	17.59	10.69	9.57	5.56
Cursive.....	64	6–4	93.95	0.81	1.50			64	1.59	2.69			64	5.28	5.20			64	8.02	6.31		

average 0.51 words more than the cursive children. This advantage of less than one word is really insignificant, when one considers that there are forty-eight items on the test. For the selected group, this difference was reduced to 0.15 of a word, which is exceedingly small. In the January tests the differences were again small, being 1.65 words for the large groups and 1.29 words for the selected groups. Although these differences are again small, they are more reliable than those in the October tests. In April the differences between the means had increased to 8.78 words with a standard difference of 7.63 for the larger groups and to 8.27 words with a standard difference of 5.91 for the selected groups. In June [1] the difference between the means was greater than the mean for the cursive group, both for the large groups and for the selected groups. Moreover, the reliability of these differences is extremely high, the standard difference being 7.51 for the large groups and 5.56 for the selected groups.

Similar differences were evident in all the final tests, as is shown in Tables XI and XII. The data in these two tables reveal the consistent superiority of the manuscript group at the end of the experiment, this group scoring on the average from one and a half to approximately three times as high as the cursive group. The standard difference was remarkably high and constant, being very close to 7.6 times the sigma of the difference between the means in each test, when all the scores were included. For the selected groups the average standard difference on the four tests was 5.55.

Differences Between Boys and Girls

It has been frequently suggested that girls learn to read and write more readily in the early stages than do boys.

[1] The June survey included Types 2 and 3 of the Gates Primary Reading Test. These tests were not given previously because of their relative difficulty. The means would most certainly have been zero had they been given earlier.

TABLE XI

MEAN SCORES FOR TOTAL CURSIVE AND TOTAL MANUSCRIPT GROUPS ON ALL FINAL TESTS

TEST	NUMBER OF PUPILS	MEAN SCORE	S.D.	DIFFERENCE BETWEEN MEANS	DIFFERENCE / S.D.diff.
Detroit Word Recognition Test:					
Manuscript	85	16.67	7.53	7.39	7.67
Cursive	105	9.28	5.24		
Gates Primary Reading Test: Word Recognition					
Manuscript	86	18.79	10.87	10.09	7.51
Cursive	105	8.70	6.72		
Gates Primary Reading Test: Word, Phrase, and Sentence Reading					
Manuscript	86	12.53	8.99	8.33	7.72
Cursive	105	4.20	4.85		
Gates Primary Reading Test: Reading of Directions					
Manuscript	88	9.68	5.43	5.27	7.61
Cursive	104	4.42	3.88		

In this connection it is interesting to note that the mean standard difference between the girls and the boys on the October reading test was .0413, or practically a 50–50 chance of superiority for either boys or girls. The difference between the means for boys and girls was less than half a word in both cursive and manuscript classes. In June the mean standard difference was .817, which means that there are 80 chances in 100 that the girls were really superior to the boys on these tests; but the difference of approximately

TABLE XII

MEAN SCORES FOR SELECTED MANUSCRIPT AND SELECTED CURSIVE GROUPS ON ALL FINAL TESTS

TEST	NUMBER OF PUPILS	MEAN SCORE	S.D.	DIFFERENCE BETWEEN MEANS	DIFFERENCE / S.D.diff.
Detroit Word Recognition Test:					
Manuscript	49	16.57	6.66	7.41	6.68
Cursive	64	9.16	4.54		
Gates Primary Reading Test: Word Recognition					
Manuscript	49	17.59	10.69	9.57	5.56
Cursive	64	8.02	6.31		
Gates Primary Reading Test: Word, Phrase, and Sentence Reading					
Manuscript	49	11.43	8.99	7.10	5.00
Cursive	64	4.33	4.79		
Gates Primary Reading Test: Reading of Directions					
Manuscript	49	9.04	5.26	4.48	4.98
Cursive	64	4.56	3.91		

one and a half words between the means was so small that the superiority of the girls is negligible. The mean and standard deviation scores and also the standard differences for boys and girls are shown in Table XIII.

Differences in Kindergarten and Non-Kindergarten Trained Groups

In selecting the groups which were to coöperate in the experiment, all children who had attended the first grade

TABLE XIII

MEAN SCORES FOR CURSIVE AND MANUSCRIPT GROUPS
BOYS AND GIRLS LISTED SEPARATELY

TEST		NUMBER OF PUPILS	MEAN SCORE	S.D.	DIFFERENCE / S.D. diff. (G–B)
Detroit Word Recognition Test:					
Cursive	Girls	61	9.97	5.26	1.60
	Boys	44	8.32	5.21	
Manuscript	Girls	46	17.30	7.72	.85
	Boys	39	15.92	7.31	
Gates Primary Reading Test: Word Recognition					
Cursive	Girls	61	8.90	6.77	.35
	Boys	44	8.43	6.66	
Manuscript	Girls	46	18.80	11.31	.01
	Boys	40	18.77	10.36	
Gates Primary Reading Test: Word, Phrase, Sentence					
Cursive	Girls	61	4.13	4.80	−.17
	Boys	44	4.29	4.91	
Manuscript	Girls	46	13.20	8.89	.75
	Boys	40	11.75	9.11	
Gates Primary Reading Test: Reading of Directions					
Cursive	Girls	62	4.69	4.18	.90
	Boys	42	4.02	3.44	
Manuscript	Girls	49	10.47	5.57	1.55
	Boys	39	8.69	5.26	

previous to the fall term of the year 1928–1929 were excluded. This exclusion did not affect the twenty-eight children who had attended kindergarten. The kindergarten trained children were few in number but a comparison of their scores with the scores of the non-kindergarten trained children may be suggestive. In both the kindergarten and the non-kindergarten trained groups the manuscript children recognized, on the average, about a half word more than did the cursive children on the October test. (See Table XIV.) In June the average difference between the kindergarten and the non-kindergarten trained groups was approximately one and a half words, with a standard difference of .50. The average difference between the cursive and manuscript groups was approximately nine and a half words, with a standard difference of 4.27. These data suggest that for these particular children growth in reading ability was more dependent upon choice of form of handwriting than upon kindergarten experience.

The Teacher-Personality Factor

In conducting an experiment in which more than one teacher is involved, it is impossible wholly to eliminate the teacher-personality factor. One teacher may have had better training, another more experience. Such differences in training, background, and experience are often reduced to a minimum by rotating the teachers concerned. Such a procedure would have been desirable in this study but was found to be impossible because of the administrative difficulties involved. Only two of the six teachers initiating the study (one cursive and one manuscript) were available for the entire experiment. These two teachers exchanged classes at the end of the first semester. Thus, Class I was taught manuscript writing by Miss A the first term and by Miss C the second term; and Class II learned cursive writing with Miss C the first term and with Miss A the

TABLE XIV

MEAN SCORES ON GATES PRIMARY READING TEST: WORD RECOGNITION, FOR KINDERGARTEN AND NON-KINDERGARTEN TRAINED CHILDREN—CURSIVE AND MANUSCRIPT GROUPS—INITIAL AND FINAL TESTS

	Number of Children	October				June			
		Mean	S.D.	Difference Between Means	Difference / S.D. diff.	Mean	S.D.	Difference Between Means	Difference / S.D. diff.
Kindergarten									
Cursive	30	.80	1.64	.45	.79	9.00	7.50	8.14	2.34
Manuscript	8	1.25	1.39			17.14	9.04		
Non-Kindergarten									
Cursive	77	.65	1.40	.52	2.17	8.57	6.38	10.43	7.29
Manuscript	80	1.17	1.60			19.00	11.04		

second term. Neither of these teachers had had previous experience in teaching manuscript writing.

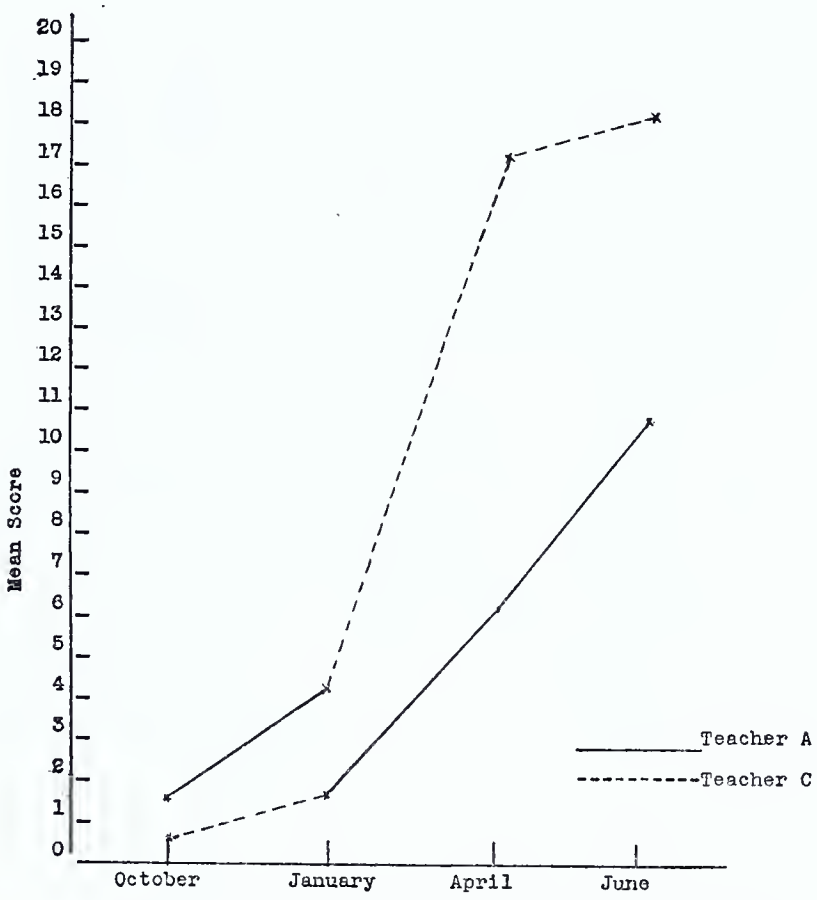


FIG. 7. Mean Scores for Classes I and II—Gates Primary Reading Test—October–June

Surveys of the two classes in October, January, April, and June reveal the superiority of the manuscript group at every point regardless of which teacher had the group. (See Figure 7.) There was a tendency for the curves of these two particular classes to converge during the April to June interval, whereas in the curves for the total cursive and total manuscript groups there was a greater divergence dur-

TABLE XV

MEAN SCORES FOR CLASSES I AND II—GATES PRIMARY READING TEST: WORD RECOGNITION
OCTOBER, JANUARY, APRIL, AND JUNE

		I.Q.		OCTOBER				JANUARY				APRIL					JUNE			
	Number	Mean	S.D.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	Teacher	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.	Mean	S.D.	Diff. of Means	Diff. / S.D.diff.
Class I Manuscript Teacher A	33	94.94	6.63	1.47	1.80	.99	2.91	4.27	4.32	2.75	3.02	Miss C	16.85	8.37	9.40	5.16	17.97	11.17	7.60	3.39
Class II Cursive Teacher C	29	97.79	18.54	.48	.77			1.52	2.73			Miss A	7.45	5.73			10.37	6.03		

ing the April to June period than during any previous interval. It is probable that the slowing up in Class I after the April survey was due to something other than the experimental factor. In spite of the apparent slowing up of Class I, this group exceeded the mean of Class II by 7.60 words, the standard difference being 3.38. (See Table XV.)

It is interesting to note that both of the other manuscript classes exceeded the means for the other cursive classes in the June tests. In other words, no cursive class exceeded any manuscript class. The means and sigma scores for each cursive and each manuscript class in October and June are shown in Table XVI.

TABLE XVI

MEAN SCORES OF CURSIVE AND MANUSCRIPT GROUPS BY CLASSES—GATES PRIMARY READING TEST: WORD RECOGNITION—OCTOBER AND JUNE

	NUMBER	MEAN C.A.	MEAN I.Q.	OCTOBER		JUNE	
				MEAN	S.D.	MEAN	S.D.
Manuscript							
Class I	33	6–3	94.94	1.47	1.50	17.97	11.17
Class III	24	6–4	95.88	1.28	1.97	16.74	9.93
Class V	31	6–3	97.10	.76	1.23	19.83	10.44
Cursive							
Class II	29	6–4	97.79	.48	.77	10.37	6.03
Class IV	38	6–2	94.81	1.09	1.93	10.93	7.39
Class VI	40	6–6	86.83	1.50	.00	6.70	5.89

Differences Between Pupils on Different Mental Levels

The question is sometimes asked, "Do bright or dull children reflect the greater influence of writing on reading?" To answer this question, the children were divided into five subgroups on the basis of mental level, the ranges in I.Q. for the respective groups being 70 to 79, 80 to 89, 90 to 99, etc. Mean scores for cursive and manuscript groups within these five classifications were secured and compared.

These comparisons are shown in Table XVII. The number of pupils in the upper and lower levels is small and the means are less reliable than those for the larger groups. In every case the data presented in this table are suggestive rather than conclusive. In so far as these data are reliable, they indicate that the choice of form of handwriting is as important to the child of 110 to 119 I.Q. as it is to the child of 90 to 99 I.Q., so far as effect of handwriting on reading is concerned. For example, the difference between the means of the cursive and manuscript groups at the 110 to 119 I.Q. level was 11.81 with a standard difference of 3.22; and the difference between the means at the 90 to 99 I.Q. level was practically as great, the difference being 10.03 and the standard difference 4.46.

Summary

In interpreting the results of this experiment it is necessary to keep in mind certain limitations. In no case was there as large a number of children as was desirable. In some cases the groups were exceedingly small. Statistical interpretation in such cases is highly unreliable and is included in this report as suggestive of general trends and not as precise and conclusive evidence.

It should be remembered also that the children in the manuscript group had a slight advantage in general mental level, having about four points higher I.Q., on the average, than the children in the cursive group. However, this advantage was eliminated by the selection of two smaller groups that were equivalent in I.Q.

With these qualifications we may report the findings of this experiment as follows:

1. Distribution of reading scores of pupils in each group without regard to kindergarten training, sex, or general mental level, points to the decided superiority of manuscript over cursive writing in its influence on beginning reading.

TABLE XVII

MEAN SCORES ON GATES PRIMARY READING TEST: WORD RECOGNITION, FOR CURSIVE MANUSCRIPT GROUPS BY I.Q. LEVELS

I.Q. GROUP		NUMBER OF PUPILS	OCTOBER				JUNE			
			Mean	S.D.	Difference Between Means	Difference / S.D. diff.	Mean	S.D.	Difference Between Means	Difference / S.D. diff.
110–119	Cursive	7	.57	1.05	.72	1.16	9.33	6.21	11.81	3.22
	Manuscript	7	1.29	1.27			21.14	7.48		
100–109	Cursive	18	.89	1.91	−.12	−.23	11.29	5.18	9.30	4.21
	Manuscript	22	.77	1.35			20.59	8.62		
90– 99	Cursive	36	.67	1.20	.30	1.03	11.11	7.33	10.03	4.46
	Manuscript	37	.97	1.28			21.14	11.50		
80– 89	Cursive	31	.71	1.71	.92	1.53	6.87	5.69	8.13	3.37
	Manuscript	19	1.63	2.25			15.00	9.50		
70– 79	Cursive	15	.53	.62	.47	.56	3.53	4.47	13.14	1.67
	Manuscript	3	1.00	1.42			16.67	13.47		
Total Cursive		107	.68	1.26	.51	.75	8.70	6.72	10.09	7.51
Total Manuscript		88	1.19	1.65			18.79	10.87		

2. There was almost no difference between the scores of the boys and the scores of the girls. At the beginning of the experiment the boys' and girls' reading scores were practically identical. In June the difference between the means was less than one and a half words in the girls' favor, a difference that is statistically insignificant.

3. The children with kindergarten training scored approximately one half word higher, on the average, in the June survey than did the non-kindergarten trained children. Although this difference is small, it is fairly reliable. However, the difference between the kindergarten and non-kindergarten groups was very slight when compared with the difference between the cursive and manuscript groups. Thus it appears that for these particular children, attendance in kindergarten has much less influence on reading than has the choice of form of handwriting.

4. While it cannot be claimed that the teachers in the two groups were strictly equated in this experiment, an attempt was made to reduce the factor of teacher personality to a minimum. One cursive and one manuscript teacher of approximately equal training and experience exchanged classes at mid-year, while each of the remaining eight teachers taught an experimental group only one term.

No cursive group reached or exceeded the mean score of any manuscript group.

5. Manuscript writing is distinctly superior to cursive writing in its effect upon reading for each of the five mental level groups studied.

All the data from this investigation indicate that manuscript is distinctly superior to cursive writing in the facilitation of beginning reading.

It is possible that the use of a less phonetic method of teaching reading would reflect less transfer from the manuscript writing. Also, it is possible that a different group of teachers would achieve different results. Repetition of the

experiment, however, would probably yield a difference in the same direction, that is, in favor of the manuscript group, though the difference might not be as great as that found to exist between the two groups in the present investigation.

While it has always been recognized that there was a close relationship between reading and writing, authors of first grade primers and readers express widely differing opinions concerning the influence of manuscript writing on reading. Of 45 reading manuals examined, 4 authors prescribed script, 17 recommended print, 9 made no choice, 12 suggested a combination of print and script for blackboard and seat work, while 3 made no mention of handwriting. Of 62 authors of primary readers (exclusive of those mentioned above) 16 favored script, 10 favored print, 11 made no choice, 20 recommended a combination of methods, while 5 made no mention of type of handwriting to be used in word drills. (See Table XVIII.) In no case was experimental evidence submitted in support of the author's opinion.

TABLE XVIII

PUBLISHED OPINIONS OF 107 AUTHORS OF FIRST GRADE READERS CONCERNING CHOICE OF HANDWRITING METHOD

PREFERRED HANDWRITING METHOD	AUTHORS OF TEACHERS MANUALS	AUTHORS OF PRIMERS AND FIRST READERS	TOTAL
Authors favoring cursive	4	16	20
Authors favoring manuscript	17	10	27
Combination	12	20	32
Mentioned but made no choice	9	11	20
No mention	3	5	8
	45	62	107

If the real influence of manuscript writing on beginning reading is as great as that indicated by the results of the writer's study, primary teachers and supervisors should take cognizance of the fact in their classroom practice.

Authors of primary readers might well suggest in their teachers' manuals the use of manuscript writing.

MANUSCRIPT WRITING AND EYESTRAIN

Experts in the field of sight-saving claim that the use of simple manuscript letter forms reduces eyestrain. In a paper presented at the Annual Conference of the National Society for the Prevention of Blindness held in New York in 1928, Miss Erma Grill [10, pp. 407–412] explained that "the first value of a letter form is its legibility. It is an established fact that printing is more easily read than ordinary handwriting; in proof of this is the fact that all typewriters and mechanical devices for writing have alphabets like printing types." [1] Miss Grill goes on to say that from an ophthalmological point of view, manuscript would appear to be the ideal form of handwriting for sight-saving classes, since it is based on circles and straight lines, with an absence of acute angles. The small number of strokes, the omission of all superfluous strokes, and the definiteness with which the strokes are combined in a particular letter make manuscript writing especially desirable for the child with defective vision.

Miss Grill bases her conclusions, in part, on the opinion of Dr. S. Judd Beach [1, p. 209]. Dr. Beach believes that the best ophthalmologic test is that using the Maltese cross with twelve acute angles. In his opinion, sensitiveness to acute angles is the best indicator of even minute refractive errors. Thus the elimination of acute angles in writing, as in the vertical manuscript form, would tend to decrease the strain on the eye muscles.

In this connection it is interesting to note the opinion of Dr. James Kerr, formerly Honorary Surgeon at the Bradford Royal Eye and Ear Hospital, and School Medical

[1] From Grill, Erma, "Manuscript Writing and Its Value to a Sight-Saving Child." By permission of *Educational Method*.

Officer for London. In his book, *School Vision and the Myopic Scholar* [13, pp. 103 and 129], Dr. Kerr expresses his belief that print-writing or manuscript writing is the only type of handwriting which should be taught to children in sight-conservation classes. He recommends the omission of all connecting strokes between letters, thus reducing the eye work of writing almost half. He also recommends the omission of guiding lines for writing because of the fine eye adjustments required in making all strokes which touch the guide lines. He believes that there is everything to gain educationally from the use of the manuscript method which eliminates unnecessary strokes and allows more rapid writing.

ACCEPTABILITY OF MANUSCRIPT WRITING IN BUSINESS

One of the chief objections to the introduction of manuscript writing into the curriculum is the fear that children taught handwriting by this method would encounter difficulty in securing employment on leaving school. This objection may have been valid a few years ago but can scarcely be urged at present by the well informed. The superior legibility of manuscript writing has led to an increasing demand for training in this type of handwriting. One of the largest firms in London requires all its junior clerks to adopt print-script (manuscript), and has established classes on the premises for the teaching of it [3]. Business men both in England and in America have expressed their approval of manuscript writing.

The fear that the use of manuscript writing would destroy individuality in handwriting and lead to a stereotyped form has not been justified. Examination of many hundreds of samples of manuscript writing made by children copying the same text shows surprisingly little uniformity. Differences in slant, in letter proportion, and in distribution of pressure characterize the writing of individuals in manuscript as in cursive writing.

CHAPTER IV

CURRENT PRACTICE IN HANDWRITING

The purpose of this chapter is to summarize the important studies which concern the psychology and pedagogy of writing, both cursive and manuscript.

In introducing manuscript writing into the Lincoln School and the Horace Mann School, of Teachers College, Miss Wise made this statement [25, pp. 19–20]: "Any method of teaching that applies to teaching a running hand can also be applied to 'manuscript.' If arm movements are desired they can as easily be obtained with this writing as with any other; perhaps more easily obtained as the movements are simpler. All theories about the holding of the pen, the slope of the desk, the lighting, the slant of the hand are equally applicable. Drill work is as necessary or unnecessary to manuscript writing as to any other; the teacher, if she so desires, may give drill in essential forms and penstrokes or she may leave all to a kindly providence and just let the children write, according to her philosophy of teaching. Everything that is known about the length and frequency of practice periods and rest periods, it goes without saying, must necessarily be equally useful for either handwriting." [1]

Gray expressed much the same opinion in reporting his experiment on movements in writing. He says [8, p. 270], "No significant differences were found between manuscript writing and cursive writing in the manner of grasping the pen, in the sideward movement of the hand within words, in the method of moving the hand and arm along the

[1] From Wise, Marjorie, *On the Technique of Manuscript Writing.* By permission of Charles Scribner's Sons, publishers.

line, or in the combination of hand movements, arm movements, and finger movements executed while forming the letter strokes."[1]

The difference between cursive and manuscript writing, therefore, is a difference in letter form only, and not a difference in teaching method. It would appear that whatever we may consider good teaching technique is equally applicable to both cursive and manuscript instruction.

The act of writing is exceedingly complex, involving the use of approximately five hundred muscles, among them the large muscles of the arm, shoulder, elbow, and wrist joints, and the small finger muscles [21, p. 49]. The acquisition of writing skill requires a nice coördination of these muscles in response to visual and kinaesthetic sensations. This coördination may be interfered with by any one of the following factors, or by a combination of several of them: poor eyesight, nervousness, external environment, health, and temperament. The expert teacher will be cognizant of these factors in employing the best teaching methods and materials available.

Among the factors which most readily affect the writing situation are the following: posture, lighting, drill, the choice of pen or pencil, the length and frequency of the writing period, and the choice of good models to copy.

CHOICE OF PEN OR PENCIL

For beginning writing the most common practice is to use a soft chalk on blackboards, giving play to the large muscles in writing very plain letter forms. In making the transition from blackboard to pencil and paper, provision is made for continued use of the large muscles by use of large sheets of unruled paper and large primary pencils

[1] From Gray, William Henry, "An Experimental Comparison of the Movements in Manuscript Writing and Cursive Writing." By permission of the publishers.

or crayons. Pen work is not usually undertaken until well along in the fourth grade and in some schools it is delayed even longer. There is no general agreement on this point, however, for in one private school in New York City the children use pen and ink from the very beginning of writing on paper.

POSTURE

Correct posture is an important factor in writing, but it should not be stressed to the exclusion of every other consideration. The writer should assume an easy position, with both feet on the floor. The best writing is done on a sloped desk; a slant of about one in four allows a comfortable position. The best position for the paper is at an angle of approximately 70 degrees to the writer. The writing level should be kept constant, the writing surface being moved as the writing progresses in order to prevent a strained position on the part of the writer.

LIGHT

Light should come from the left to prevent the shadow of either hand or body from falling on the writing. Direct sunlight or other brilliant light on the writing surface should be avoided.

SLANT

A natural slant in the writing itself has been found to be most rapid and legible, the optimum slant being about 75°. As the angle decreases below 70° the legibility rapidly decreases [21, p. 97].

GUIDE LINES

The question of the advisability of using guide lines has been a very difficult one. There seems to be considerable evidence, however, that the use of extra lines on the writing surface is a complicating rather than a simplifying

factor. Woodworth and Judd both found that a base line was of value in keeping the alignment of the writing but that lines other than the base lines were worse than useless, being positively injurious to movement and a hindrance to speed [21, p. 99].

DRILL AND COPY BOOKS

The amount of drill to be given to handwriting depends upon one's philosophy of teaching. The more progressive schools consider writing a tool to be acquired more or less incidentally in connection with major units of work. They believe that writing should take place in response to a real need, as in writing letters of invitation or acceptance, recording classroom activities, and so forth. In this type of situation there is no set period for drill in handwriting and copy books are used only as reference books in which to look up correct letter forms. In schools of a more formal type, regular programs are followed which provide for systematic drill in handwriting as in other school subjects. The time allowed for drill in handwriting varies from school to school and from grade to grade. It depends, too, upon the particular system of handwriting adopted. In general, practice periods should not exceed fifteen minutes in the primary grades. In special cases the periods may be extended, but for the most part short and frequent drill periods are preferable to long and widely dispersed practice in handwriting instruction.

The choice of a good copy book is important. Criteria for its selection include correctness of letter form, and suitability and gradation of lesson content. A list of copy books most widely used is given in the bibliography at the end of this report.

Success in handwriting is subject to so many influences that neither immediate nor uniform perfection should be expected in the performance of young children.

CHAPTER V

CONCLUSIONS

In summarizing the data presented in the foregoing chapters, it is difficult to distinguish between conclusions drawn from experimental investigations and those based upon expert opinion. Although this distinction has been made in the text, the distinction, in many cases, is more apparent than real, because of the limitations of certain of the experimental procedures. In many instances, the number of individuals participating in the experiments was so small, and the duration of the learning period so brief, that reliable statistical interpretation of the data and accurate measurement of improvement in the experimental factor were exceedingly difficult.

Reports of the various studies are given here in terms of the conclusions expressed by the several investigators in their own statements of their findings. A complete bibliography is appended to enable the reader to consult the original reports. In general, the writer's own reaction to these conclusions has been suggested in the studies cited in the previous chapters.

SUMMARY OF PREVIOUS REPORTS

The general conclusions with respect to the value of teaching manuscript writing, as expressed by experts and previous investigators may be summarized as follows:

1. Manuscript writing is found to be significantly more legible than cursive writing [22].
2. Manuscript writing is easier for children to learn [7].
3. Manuscript writing is more rhythmical to write [4].

4. Manuscript writing is more pleasing to read [4].

5. The neatness and legibility of manuscript writing tend to carry over to other written work [3].

6. For certain groups, manuscript writing appears to be as rapid as cursive, different investigators reporting conflicting results [2], [3], [4], [5], [6], [8], [15], [20], [23].

7. Use of manuscript writing reduces physical strain [4] and eyestrain [1], [10], [13].

8. Manuscript writing facilitates learning to read and spell [7].

9. Manuscript writing is as individualistic as cursive writing [3], [4].

10. The simple letter forms used in manuscript writing constitute an excellent basis for cursive writing, if such a transition is desired [3], [4].

11. Manuscript writing is favored by all individuals for writing legends, poems, names, and so forth [7].

12. Business men of both England and America are showing an increasing interest in the use of manuscript writing [3], [4].

GENERAL SUMMARY

Wherever manuscript writing has been tried, it has met with enthusiastic endorsement. Data from experimental studies indicate that manuscript writing is distinctly superior to cursive writing for its facilitation of beginning reading, and for its superior legibility and speed in the primary grades. Studies conducted in the upper elementary grades yield contradictory and inconclusive evidence with regard to the superiority of either of the two methods for these grades.

Commercialized systems of cursive writing are so firmly entrenched in the schools throughout the United States that manuscript writing enthusiasts find it difficult to effect changes in educational practice even in the primary grades.

In spite of the opposition to be overcome, manuscript writing is becoming the accepted form for written work in progressive schools for primary grades, and for certain types of reports at all levels. Many pupils acquire considerable skill in the use of both cursive and manuscript writing, and use whichever form is more appropriate to the work at hand.

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